

Fig. 9. *Sterope armatus*.

Fig. 10. *Sterope interruptus*.

Fig. 11. *Sterope ovalis*.

Fig. 12. *Carrillus oblongus*.

Fig. 13. Second thoracic leg of *Carrillus oblongus*.

Fig. 14. First abdominal extremity of *Carrillus*.

Fig. 15. Second abdominal extremity.

XXXVII.—On the Fructification of the genera *Clathrus* and *Phallus*. By M. MAURICE LESPIAULT*.

THE REV. M. J. BERKELEY, in a notice published in 1839†, described the fructification of *Phallus caninus*, Huds. (*Cynophallus caninus*, Fries); he demonstrated by delicate observations, that, in this genus, until then wrongly separated from the *Hymenomyces*, or rather the *Basidiosporæ* of Lévillé, the spores were supported on basidia, as in the *Boleti*, the *Agarici*, and other mushrooms of the same class. Mr. Berkeley thence presumed that an analogous organization must be found in all the *Phalloideæ*, but no further recent observations had as yet supported this hypothesis.

M. Corda, whose analyses have thrown so much light on the intimate structure of Fungi, denies the existence of the basidia in the genus *Phallus*: “*Spore in strata congestæ, mucò primum firmo dein diffuente immersæ, simplices, basidia nulla*‡.” (Anleitung, p. 119.)

The investigations of botanists on this subject have not gone further; the fructification of the genus *Clathrus* is still more imperfectly known. Nor can we be surprised, when the analysis of these mushrooms presents such great difficulties.

It is, in fact, not sufficient to subject to examination individuals little developed or inclosed in their volva; the substance which contains the fructiferous organs must be firm and of an almost fleshy consistence. As soon as it has begun to soften, the spores are displaced, and the basidia disappear. It is moreover very difficult, even with the aid of a perfectly fine-pointed lancet, to remove very thin sections of a mucilage which yields to the slightest pressure: we are therefore obliged, in order to obtain

* Translated from the *Annales des Sciences Naturelles* for July.—The position which *Clathrus cancellatus* should occupy in the class of the *Basidiosporæ*, and the mode of insertion of the spores of this curious plant, have been already established by Mr. Lévillé, but, notwithstanding the priority and accuracy of the observations of M. Lévillé, we think the memoir of M. Lespiault, who has extended his researches to other plants of the group of the *Phalloideæ*, will be read with interest.—(*Ed. Ann. des Sci. Nat.*)

† Annals of Natural History, vol. iv. p. 155.

‡ There is no question here of the *Phallus caninus*, which has become the type of a new genus.

some transparency, to wet the substance subjected to examination; but then the action of the water detaches a cloud of spores, which immediately obscure the field of the microscope. All these circumstances suffice to explain how the observations of botanists have remained so long without result.

If a *Clathrus cancellatus* still undeveloped is cut vertically, we remark at first externally, a volva composed of two membranes separated by a thick gelatinous layer; immediately under the volva and applied to its interior surface are seen the branches, almost in a rudimentary state, which are subsequently developed, to form the most brilliant part of the mushroom. The interior of the space circumscribed by this network is occupied by a greenish matter, in the centre of which is a small cavity filled with a colourless and gelatinous liquid.

A microscopical examination is necessary to ascertain the intimate structure of these various parts of the mushroom. The gelatine of the volva is formed of or intermingled with a great number of anastomosed filaments, sometimes articulated, and terminated by small swellings; it is divided by a thin membrane into parts completely isolated from one another, and susceptible of separating like the sections of an orange. This arrangement makes the volva appear, on the outside, barred into small polygons. The substance of the trellis, of a rose-colour, is solely composed of large, round and perfectly distinct cells: some botanists, deceived by a superficial examination, have imagined that these cells contained a liquid which carried along with it the seeds; but the branches of the *Clathrus* are in reality only a support analogous to the stem of the *Phallus*, and serve solely to prop the greenish substance, the structure of which we proceed to examine.

This substance, at first fleshy, then mucilaginous, is composed, as in the *Lycoperdons*, of sinuous cavities, variously anastomosed, separated from one another by a colourless zone, and strewed with greenish spores, supported, to the number of four to six, on club-shaped basidia. These basidia, scarcely refracting the light, should be observed with attention to be seen distinctly; they are sometimes furnished with, and at other times deprived of, sterigmata, and as they do not rise to the same height, the greenish layer of spores which surrounds the hymenial cavities appears to have a certain thickness.

All this fructiferous mass speedily softens, tears into shreds, by the development of the anastomosing branches to which it adheres, and deliquesces. The liquid which carries the seeds diffuses a well-known cadaverous odour*.

* The volva of *Clathrus*, on the contrary, exhales a delicious aroma,—a remarkable singularity hitherto unnoticed.

In the *Phallus impudicus*, the type of the genus *Phallus*, there exists, as in the preceding genus, a gelatinous volva, inclosed in two thin membranes, hymenial cavities whose agglomeration forms a mucilaginous mass, and lastly a central axis, which serves, like the branches of the *Clathrus*, to support the hymenium.

The analogy is perfect, and to dilate further on the structure of *Phallus* would merely be to repeat what we have already said.

The organs of fructification deserve however particular notice. The hymenial cavities do not at all differ from those of *Clathrus*, but they are furnished with spores at least twice as large; these spores are grouped in fours, fives and sixes, and are undoubtedly supported on basidia, which it is very difficult to isolate and to see distinctly, but the existence of which is evident. The fructiferous substance undergoes the same modifications as in *Clathrus*; at first adhesive, it afterwards becomes mucilaginous, and in the end deliquesces, forming a liquid of a very disagreeable odour.

An identical organization already observed in the genus *Cynophallus* ought necessarily to exist in the rest of the *Phalloideæ* and of the *Clathraceæ*; it doubtless extends also to the *Lysuroideæ* and to the genus *Battarea*, which forms a point of transition with the *Trichogastrea*.

We hope that further observations will confirm these hypotheses, and throw some light on the structure, so imperfectly known, of the mushrooms belonging to these various groups.

XXXVIII.—*Journey through Java, descriptive of its Topography and Natural History.* By Dr. FR. JUNGHUHN*.

THE present work, by the well-known botanist Dr. Junghuhn, furnishes us with the results of the author's great labours in natural history in Java. They are the more interesting, as his descriptions (as might be expected from a botanist) relate especially to vegetation. They are also the more important to the phytographer, as the author has shown himself capable of connecting intimately these descriptions with the other natural features of the country; and thus to present to our minds picturesquely all the details of natural history, and at the same time in a strictly scientific manner. We may also infer, from the ability of the author, that his geognostical and physical investigations possess the greatest accuracy; from which circumstance, we have in this work a valuable mass of observations in natural history, corresponding to the magnificence of the natural features of Java.

It is our intention to give a sketch of this journey as far as our limits will allow, which will be the more easy, as the author characterizes episodically every distinct subject in all its relations to natural history.

* From the *Botanische Zeitung*, Aug. 29th, 1845.